

Consciousness as a Subjective Reflection of Reality

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Abstract

This work addresses the conceptualization of consciousness from a mathematical perspective, proposing a model that reflects the interaction between individual information and social influence. The dynamics of these interactions are examined, and the conditions under which consciousness can manifest as a change from one state to another are presented, suggesting a bifurcation in the perception of reality.

1 Introduction

Consciousness, traditionally explored by philosophy and psychology, is approached here from the realm of applied mathematics. This article presents a mathematical model that simulates consciousness as a subjective reflection of reality, based on the interaction between an individual's information and their social environment. Through this approach, we seek to provide a new quantitative perspective on how individuals process and value information in the context of society.

2 Mathematical Model

Let us consider the following model:

$$\begin{cases} \frac{dx}{dt} = x_1 - x_2xy + x_3xy^2, \\ \frac{dy}{dt} = B_1 - B_2xy \end{cases} \quad (1)$$

In the model, x represents the information of an individual, expressed in some unit, such as the number of words of a certain text, about individuals $y(t)$ with whom the individual x has contact. B_1 is the increase of individuals y in the sphere of observations of the individual x , x_1y is the impression of the individual x per unit of time, x_3xy^2 is the impression of the individual x caused by the organization and plans of the individuals y , $-x_2xy$ and $-B_2xy$ are the exchange terms of the individual x and of the individuals y , so that $C = x_2/B_2$ is an estimate, the value of the individuals y before the judgment of the individual x , the consciousness of the individual x in the society of individuals y .

The equilibrium positions of the model are as follows:

$$x = \frac{x_1 B_2 + x_3 B_1}{x_2 B_2}, \quad y = \frac{B_1 x_2}{x_1 B_2 + x_3 B_1} \quad (2)$$

The magnitudes σ and Δ are:

$$\sigma = -x_2 y + x_3 y^2 - B_2 x, \quad \Delta = x_2 B_2 x y - x_3 B_2 x y^2 \quad (3)$$

The value C is:

$$C = \frac{x_2}{B_2} = \frac{y(x_1 + x_3 x y)}{B_1} \quad (4)$$

We deduce that the consciousness C of the individual x manifests itself by causing a bifurcation from an unstable focus to a stable focus when:

$$x_3 y^2 < B_2 x + x_2 y \quad (5)$$

3 Appendix

Below is a practical example of the system of equations with hypothetical values assigned to the variables and the system is solved with its conclusions.

Let's consider the following hypothetical values for the variables:

$$x_1 = 2, \quad x_2 = 0.5, \quad x_3 = 1, \quad B_1 = 3, \quad B_2 = 1 \quad (6)$$

Substituting these values into the model's equations, we obtain:

$$\begin{cases} \frac{dx}{dt} = 2 - 0.5xy + xy^2, \\ \frac{dy}{dt} = 3 - xy \end{cases} \quad (7)$$

The equilibrium positions for these values are:

$$x = \frac{2 \cdot 1 + 1 \cdot 3}{0.5 \cdot 1}, \quad y = \frac{3 \cdot 0.5}{2 \cdot 1 + 1 \cdot 3} \quad (8)$$

Solving for x and y , we find:

$$x = 10, \quad y = 0.6 \quad (9)$$

With these values, the magnitudes σ and Δ are:

$$\sigma = -0.5 \cdot 0.6 + 1 \cdot 0.6^2 - 1 \cdot 10, \quad \Delta = 0.5 \cdot 1 \cdot 10 \cdot 0.6 - 1 \cdot 1 \cdot 10 \cdot 0.6^2 \quad (10)$$

The value of C is:

$$C = \frac{0.5}{1} = \frac{0.6(2 + 1 \cdot 10 \cdot 0.6)}{3} \quad (11)$$

The consciousness C of the individual x manifests when:

$$1 \cdot 0.6^2 < 1 \cdot 10 + 0.5 \cdot 0.6 \quad (12)$$

4 Bibliography

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